15¢

September 29, 1951

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

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DETROIT

TECHNOLOGY DEPT.

Demon Jet

See Page 197

A SCIENCE SERVICE PUBLICATION

CHEMISTRY

Create Hottest Flame

Fluorine burning in hydrogen gives hottest flame that man has ever created. Temperature found by direct comparison with that of the sun.

➤ THE HOTTEST flame that man has ever created, fluorine burning in hydrogen, at 8,000 degrees Fahrenheit was described by Dr. A. V. Grosse of Temple University's Research Institute at a meeting in Washington celebrating the National Bureau of Standards' 50th Anniversary.

Comparing the flame directly with the sun, Dr. Grosse and his team found that at ordinary atmospheric pressure the temperature was 7,000 degrees Fahrenheit (4,300 K.) which increased to 8,000 degrees Fahrenheit (4,750 K.) when under five atmospheres pressure. The sun temperature is 9,000 degrees Fahrenheit and with higher pressures the Temple University scientists expect to reach sun temperature on earth.

The oxy-aluminum torch in previous Temple experiments had been able to melt anything against which it was directed, but the even higher temperature of the hydrogen-fluorine torch will likewise melt everything so far known on earth.

The sun and the H-Fl flame were directly compared by matching their brightness through glass filters by what is known as the line reversal method.

A heliostat that had lain dust-covered and unused at Bryn Mawr College was used by Dr. R. H. Wilson, Jr., Temple University astronomer, to bring the sunlight to the laboratory for comparison.

Dr. J. B. Conway, of Temple and Villanova College, and Dr. A. H. Engelbrecht, Austrian UNESCO exchange student, were other members of the high temperature team.

So far the hydrogen-fluorine flame has no industrial use since the combinations of oxygen with aluminum, magnesium and zirconium provide sufficiently high heat for practical purposes.

Hydrogen and fluorine are both gases, fluorine being an unruly active gas that had little practical use before the Second World War.

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METEOROLOGY

Jet Streams Circle World

➤ "JET STREAMS," the extremely fast currents of air which circle the earth from west to east two to three miles up in the sky, are probably the result of a mass of cold air from the north meeting a mass of warm air from the south.

This is the tentative conclusion of Philip F. Clapp and Jay S. Winston of the U. S. Weather Bureau's extended forecast section after study of one jet stream over the eastern Atlantic.

Jet streams reach speeds of 250 miles per hour or better. Pilots trying to set speed records usually fly from California eastward and try to fly on a day when a jet stream can help them. Commercial pilots, flying the Atlantic and Pacific, search them out with the help of weathermen.

Planes flying from Europe fly low to avoid them, planes going to Europe get a lift from them.

Jet streams vary in width from 400 to 1,000 miles and their borders are accented by a sharp increase in the speed of the wind. They seem to have considerable influence on the weather below them, being associated with an increase in rain and with stormy weather.

The coming together of two masses of air, one of which is cold and the other warm, is known as confluence and the confluence theory of the formation of jet streams is one explanation put forward by scientists for their existence.

The two Weather Bureau meteorologists studied the records on a jet stream of April and May, 1944, as it gathered speed over eastern Canada, blew across the northeastern Atlantic and then died down again. They found what they believe to be evidence backing up the confluence theory, although they say studies should continue. They reported their findings in the JOURNAL OF THE AMERICAN METEOROLOGICAL SOCIETY (Aug.).

In the last week of April and the first week of May, they found, there was a low pressure area over Baffin Bay between Canada and Greenland. The air was circling around this area. Coming down its western side was the cold air from the north. At the same time, a high pressure area over the southeastern United States was responsible for warm air moving from Mexico, the Gulf, and the Mississippi Valley.

These two streams began to flow together 10,000 feet up over James and Hudson Bays. Then, the action of the cold air sinking and the warm air rising brought about a loss of a small part of the potential energy in the atmosphere. This was converted to kinetic energy, thus speeding up the flow of the air.

Toward the middle of May, the high pressure area weakened and the pattern in the atmosphere was such that cold and warm air were no longer being forced together. Then the jet streams died down, to start up again when a new confluence pattern was born.

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PSYCHOLOGY

Older Folks Avoid Home Accidents by Using Care

➤ GET GRANDMA to admit, without feeling unhappy or frightened, that she needs more light to see her way around the house, and Grandpa to admit, also without fear or resentment, that he is not so spry as he used to be and cannot run down stairs without holding the hand rail.

By such measures you may be able to cut down the dangerous accidents these and other old people are prone to have around the home.

The methods are suggested by a report of Hyman Meltzer, Washington University psychologist, to the Second International Gerontological Congress in St. Louis.

About one-third of all accidental deaths occur among persons 65 years and older, figures from the National Office of Vital Statistics show. Commenting on this, W. G. Cole of the Metropolitan Life Insurance Company said that it is "inconsistent" that lives which are being lengthened through the advances of science should be subject to sudden ending or to months and years of pain due to a preventable cause, namely, accidents.

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INVENTION

Plastic Equipment Made Safe from Fungus Damage

➤ PLASTIC SHOWER curtains, seat covers and other equipment in the home are safe from damage by fungi or bacteria if made of an especially treated polyvinyl chloride composition which contains certain chemicals destructive to organisms. It is claimed that the treatment does not injure the ordinary properties of the plastic as sometimes happens in other processes.

Inventor is Walter E. Field, St. Louis, Mo. Patent 2,567,905 was awarded to him. Rights have been assigned to Monsanto Chemical Company, also of St. Louis.

In the treatment a copper quinolinolate, well-known fungicide and bactericide, is used. The use of this copper chemical alone has been previously tried but it caused deterioration. In this process another chemical offsets the deterioration. It is one of the benzenesulfonamides or toluenesulfonamides.

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PHYSICS

Artillery Size Atomic Bomb

Dress rehearsal for use of atomic weapons by and against ground troops to be held near Las Vegas. Conventional artillery can heft sufficient weight for A-bombs.

➤ ATOMIC WEAPONS for use by and against ground troops are to get a rehearsal in Operation Desert Rock on Frenchman's Flat Proving Grounds near Las Vegas, Nev. There is little doubt therefore that the atomic bomb has been made sufficiently small to be handled by artillery or some sort of guided missile.

Actually the explosive part of the atomic bomb need not be very heavy or very large. That was made known by the famous Smyth report of 1945 which stated the limits of the critical mass of the fissionable material that makes the big bang.

"The mass of the U-235 required to produce explosive fission under appropriate conditions can hardly be less than 2 kilograms nor greater than 100 kilograms," the report stated. Translated into pounds that means somewhere between 4.4 pounds and 220 pounds. But a British publication of undoubted authority somewhat later narrowed the limits to somewhere between 22 and 66 pounds.

An atomic bomb of the now usual fissionable material plutonium could therefore be made of two chunks of plutonium, each about 50 pounds or so, that can be brought together with suddenness and therefore caused to explode by action of excess neutrons of their atoms producing an almost instantaneous chain reaction.

While the early atomic bombs undoubtedly needed much more weight of apparatus to set them off surely and safely than the weight of fissionable material in them, there has been time to make such exploding apparatus much lighter and smaller.

Even relatively conventional artillery can heft quite a weight. The 155 mm. howitzer has a shell weight of 95 pounds and the 240 mm. howitzer throws a shell of 345 pounds. The gigantic railroad 14-inch rifle shell weighs 1200 pounds, which is certainly plenty for a very sizable atomic charge. Then there was the mortar of 36-inch diameter, called "Little David", which is known to have been built.

Guided missiles such as giant rockets would carry even heavier loads, but details about them are cloaked in secrecy of recent military developments. They may not be as accurate as artillery, but with an atomic weapon it probably is not necessary to be as accurate as with a lesser explosive.

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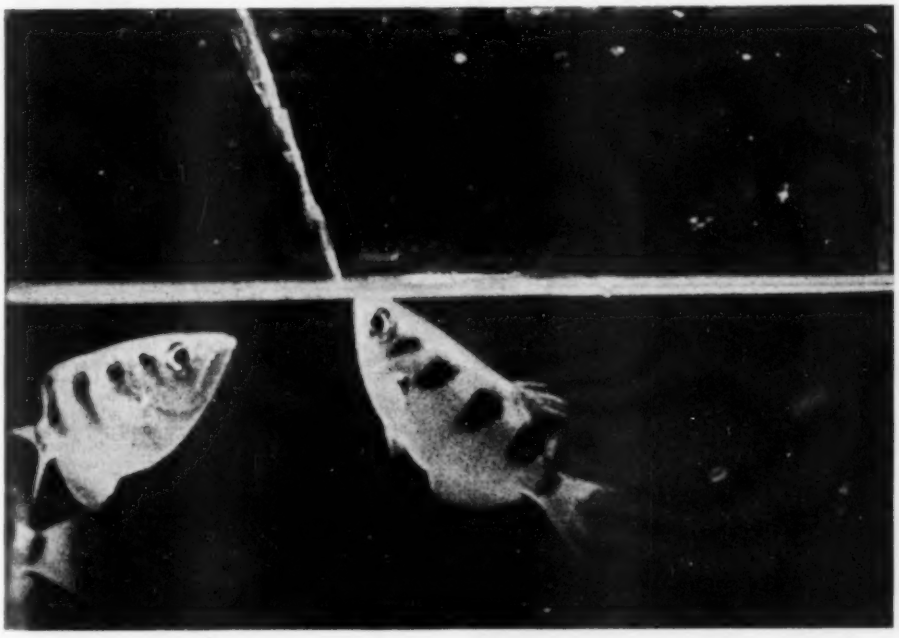

FISH JET STREAM—The jet of water which this Archer fish at the Steinhart Aquarium of the California Academy of Sciences shoots out will hit insects on overhanging vegetation at distances of several feet. From Southeast Asia, the fish spout with great accuracy and high velocity. The duration of the jet stream is less than one twenty-fourth of a second, timed exposures on motion picture films have shown.

CHEMISTRY

Nitrogen Droppeth as the Gentle Rain from Heaven

➤ NITROGEN—vital to the fertility of the soil—comes sifting down from the atmosphere onto the ground at the rate of 5.8 pounds per acre per year.

This is called a "significant" amount by DeLoss H. Matheson, chemist and bacteriologist of Hamilton Filtration Plant at Hamilton, Ont. He reported in the CANADIAN JOURNAL OF TECHNOLOGY (Sept.) on the results of 18 months of study of the fall of inorganic nitrogen compounds on the earth and bodies of water near Hamilton.

It was found, reported Mr. Matheson, that rain and snowfall produced more nitrogen than dry days, but that there were many variations on days when there was no moisture. Explanations of these variations, he said, would have to be found in more complex changes in atmospheric conditions than could be determined by the observations made in this study.

Generally, it was found, short, sharp rains yielded more concentrated solutions than did longer precipitations.

Mr. Matheson found that, during the period covered by his investigation, the total nitrogen fall was consistent with amounts previously reported by other investigators.

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INVENTION

Patent Device to Make Any Hospital Bed a Rocker

➤ ANY HOSPITAL bed becomes an oscillating type somewhat similar to the rocking bed now used in polio treatment with special attachments which are used on one bed as long as needed, then moved to another. It is designed to give oscillation therapy, a type of treatment employed for several physical difficulties, without moving the patient from the bed.

The equipment is in two parts. One is a fulcrum to place under the bed near the head end and raise the bed from the floor. The other is an electrically-operated device placed at the foot of the bed which raises and lowers the foot of the bed in rhythm. By adjustment of the fulcrum, the oscillating movement of the head can be greater or smaller. Patent 2,566,239 was awarded to Nathan D. Mininberg of New York for this invention.

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ARCHAEOLOGY

Kensington Stone Studied

➤ THE MUCH disputed Kensington stone may be an authentic relic of 14th century Norsemen after all.

This is the suggestion made by Dr. William Thalbitzer, a Danish expert on Runic inscriptions, in a report to the Smithsonian Institution in Washington.

The Kensington stone was found in 1898 near the village of Kensington, Minn., by a Swedish farmer named Olof Ohman while grubbing trees on a hill. The stone was held by the roots of an aspen, and there was some evidence that it had been there for many years. The stone contained an inscription in Runic characters which indicated that it was left by a party of Norsemen in the year 1362.

Doubt was cast on the authenticity of the find by Runic scholars who found many inconsistencies in the writing, including some words surprisingly similar to English.

The Smithsonian Institution has taken no position regarding the authenticity of the stone, but put it on exhibition in Washington so that other scholars might have an opportunity to study it. The original stone was shown from Feb. 17, 1948, to Feb. 25, 1949. A full-size replica is now on exhibition.

Dr. Thalbitzer was among those who considered the stone fraudulent. But now, after further study of the stone and in the light of modern developments in the knowledge of runes, he says, "I cannot but waver in my doubt. . . . It seems to me that, after all, the inscription may be authentic.

"The cautious philologist will find that the signification of the Kensington stone has not yet been established. It must be decided whether it has not been condemned too quickly."

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MEDICINE

TB Meningitis Victims

➤ MORE THAN half the child victims of tuberculous meningitis, once always fatal, can now be saved, Drs. Sidney Dressler and Arthur Robinson of the National Jewish Hospital in Denver report.

A 50% saving in lives has been accomplished among patients by injecting streptomycin and PAS, two modern anti-TB drugs, directly into the lower spine and brain spaces as well as into the muscles.

This treatment, with other new methods, was tried in a study undertaken with the cooperation of the U. S. Public Health Service which has also cooperated in similar studies at the following five medical schools: Columbia, Tulane, Johns Hopkins, Temple and Harvard.

Tuberculous meningitis claims more victims under the age of three than all other forms of tuberculosis combined, the doctors point out. The disease is an inflammation of the covering of the brain due to TB germs carried to the brain in the blood stream. Adhesions at the base of the brain interfere with normal circulation of the spinal fluid, building up fluid pressures which cause brain damage and death.

"Until streptomycin was developed there was nothing that could be done. They just died," Dr. Robinson explained. "But we had to learn how to use it. That was the purpose of the study."

Most of the children brought to the National Jewish Hospital under the study, the doctors agreed, were in a coma upon arrival. Some had convulsions; some were blind and deaf. Most would have died within three or four weeks without treatment.

Today, two and one-half to three years later, more than half of them are alive and apparently in perfect health. The doctors are optimistic, but still looking for better drugs or combinations of them to use in the future.

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Photographs: Cover, McDonnell Aircraft Corporation; p. 195, Elmer Moss; p. 197, Eastman Kodak Company; p. 199, U. S. Army.

SCIENCE NEWS LETTER
VOL. 60 SEPTEMBER 29, 1951 No. 13

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc. 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 2-4822.

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OCEANOGRAPHY

Birthplace of Arctic Ice

Probable birthplace of three large Arctic ice islands spotted off coast of far northern Canada. One island's course traced over period of five years.

➤ THE PROBABLE birthplace of the three large islands of ice floating in the Arctic Ocean has been sighted on the north coast of Ellesmere Island in far northern Canada.

Capt. Lawrence S. Koenig of Eilson Air Force Base, reported to the Second Alaskan Science Conference in Anchorage that he had seen there a landlocked ice sheet or shore glacier with the same characteristic markings as the floating islands. From an altitude of a few hundred feet it was impossible to tell whether the markings were water or clear ice. They gave the appearance of rivers and brooks draining the ice just like on land.

Scientists and military officials believe these islands—and others which may be discovered—might be useful as mid-ocean landing strips. They could hold camps, either military or scientific, without the danger of camping on much more fragile ice floes.

The drifting course of the third island was revealed for the first time by Capt. Koenig. First sighted in 1946 north of Point Barrow, the northernmost tip of Alaska, the island drifted in the Beaufort Current near to and beyond the North Pole. It was lost for almost two years north of Greenland, but was sighted again this August 50 miles off the coast of Ellesmere Island.

In five years the island has drifted some 3,000 miles. In all these years the shape of the island and its markings, which are its "fingerprints," changed so little that identification was easy.

Two other ice islands are being consistently followed by the Tarmagan polar weather flights. The islands are obviously different from the pack ice which fills the Arctic Ocean. While the pack ice drifts with the wind, the ice islands seem to follow the circulatory Beaufort Current, a gigantic eddy covering half the Arctic Ocean.

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BIOLOGY

Atomic Radiation Promises Good Effects on Food We Eat

➤ RADIATION similar to that produced by the A-bomb may have undreamed of good effects on the food we eat. This is what scientists at the Brookhaven National Laboratory, in cooperation with Rutgers University, New Brunswick, N. J., will try to find out.

Dr. James E. Gunckel of Rutgers will spend the next year or more at Brookhaven conducting experiments to determine the effects of radiation on vegetation.

Plantings will be made in concentric circles around a radioactive source. The effects of various dosages of vegetative growth, flowering and fruiting can thus be studied.

Drs. A. H. Sparrow and W. R. Singleton of the Brookhaven biology staff believe that there is a distinct possibility and hope that some such treatments will produce mutations that have horticultural and agricultural significance, both good and bad.

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INVENTION

Helicopter Attitude Indicator

➤ HELICOPTERS WILL be usable in bad weather with a device called an attitude indicator on which patent 2,567,212 was issued to two men, both in the U. S. Navy. They are James W. Klopp and William T. Shelton.

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On This Week's Cover

The first in-flight photograph of the U. S. Navy's jet fighter, Demon, appears on the cover of this week's SCIENCE NEWS LETTER, with the Missouri river in the foreground.

An experimental plane made by McDonnell Aircraft Corporation in St. Louis, it is the prototype for production models to be manufactured both by McDonnell and Goodyear Aircraft Corporation of Akron, Ohio.

MEDICINE

B Vitamin Clears Confused Old Minds

➤ THE B VITAMIN that prevents and cures pellagra can help old people whose mentality is affected because of hardening of their brain arteries, Dr. J. Fleetwood of Dublin, Ireland, reported to the Second International Gerontological Congress in St. Louis.

The similarity of mental symptoms in old people and in pellagra patients gave Dr. Fleetwood the idea of trying the vitamin.

Patients whose symptoms were chiefly depression, confusion and irritability improved considerably. Those in whom high blood pressure was marked showed little or no change.

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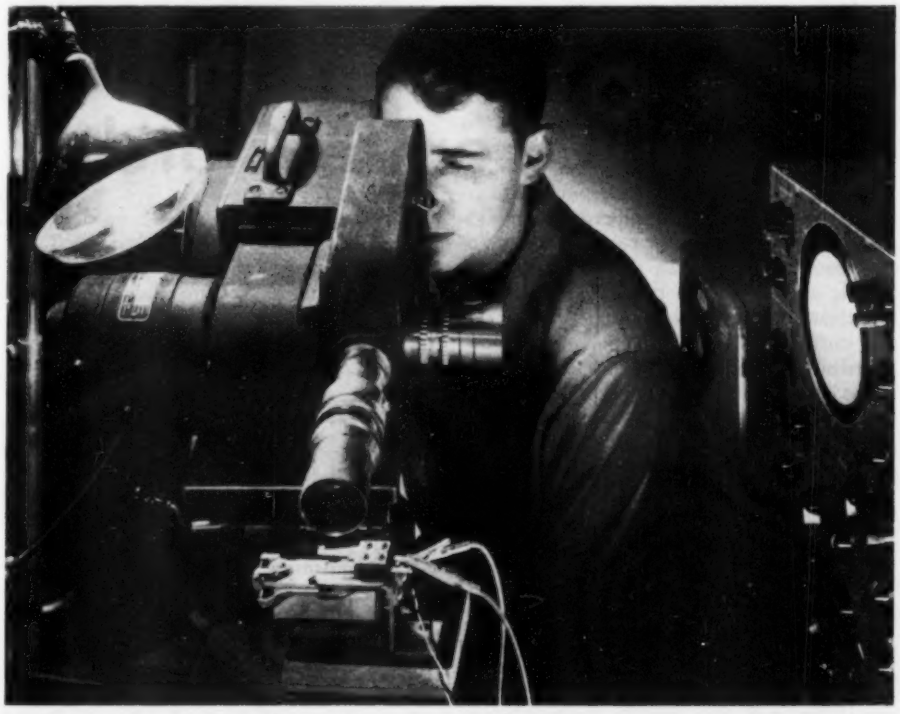

HIGH SPEED CAMERA—A modification of the Kodak High Speed Camera now permits both the mechanical and electrical aspects of a subject to be recorded simultaneously on the same film, as is being demonstrated above.

PSYCHOLOGY

Depth Perception Different

Depth or distance seen in a different way when looking at a pea and when looking at an apple. Training makes depth perception more accurate.

➤ YOU SEE depth or distance in a different way when you are looking at a pea than when you are looking at a nickel or an apple. And your depth perception of large objects can become much more accurate with training and conscious practice.

If the object is so small that its image is formed entirely on the fovea or center of the retina of the eye, then the idea formerly held by scientists still holds. That is, you see depth by a sort of triangulation process. The difference in the view of the object by your two eyes, and the distance from your eyes to the object determine your perception of its distance.

But if the object is larger, and it usually is in everyday life, then the geometrical explanation breaks down. Then your perception of depth depends not only on the difference between what your two eyes see, but also upon the scanning of the object by your eyes running over it.

This is the conclusion of Dr. J. Adamson on the basis of experiments conducted at St. Andrews University, St. Andrews, Scotland, and reported in the British journal, NATURE (Aug. 25).

Using a stereoscope, Dr. Adamson showed his subjects two arrows. Each arrow was viewed by only one eye. They were of equal thickness but of different lengths. The two images of the two arrows fused and were seen as a single arrow, but, because one eye saw a longer arrow than the other eye, the fused image seen in the stereoscope appeared to be tilted away from the observer.

Several pairs of arrows were used. In each case the difference in length was the same but the actual length differed. Some were so small that the image was smaller than the eye's fovea (the height of the Monticello building on your Jefferson nickel viewed at ten inches); others were four times as large as the fovea, or as long as the same Monticello building.

When the arrow was large, the eyes were observed to scan back and forth along it. In this case, the apparent tilt was less than might have been expected—the larger the arrow, the less the apparent tilt.

When this scanning was suppressed by requiring the observer to fixate on a small marked place at the center of the arrow, no tilt was observed.

The apparent tilt of the large arrows was found to vary for different individuals. This, Dr. Adamson concludes, is due to differences in training and also to deviations in the binocular vision of the individuals.

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ENGINEERING

Crystals Operate Clutch

➤ A NEW-TYPE, high-speed clutch to transmit power from a rotating shaft to a drive shaft, as done by the ordinary automobile clutch, utilizes certain solid chemical crystals which, when excited by a direct current voltage, bend to bind the output disk on the drive shaft to the rotating input disk on the power shaft.

This clutch is the result of experimental development at the National Bureau of Standards by Ernest Codier. It is a part of a program for the development of fast-acting clutches suitable for use in high-speed computers. Only one model has as yet been constructed. It is about six inches in diameter and a little more than an inch long.

Construction of this new so-called crystal clutch is relatively simple. The output disk is located between two rotating members, consisting of a thin flexible pressure plate and a heavier mounting plate, or input disk. The crystal elements, which bend when opposite potentials are applied to different parts of the crystal surfaces, are spaced at 120-degree intervals. When the exciting voltage is applied, the crystals press against the pressure plate at a radius of 1.5 inches, pinching the output disk between the pressure plate and the input disk.

The particular crystals used are what are known as Bimorph piezoelectric crystal elements. In the experimental unit Rochelle-salt crystal elements are used because they are readily available. These, however, are relatively unstable, and barium titanate crystals are regarded as a logical alternate.

Distinguishing features of the crystal clutch are high speed of response and almost negligible current drain. No current flows, other than insulation leakage, after the applied voltage has charged the capacity of the crystals. The clutch therefore creates no magnetic field, an advantage in some applications.

Applications for this new clutch may not be numerous. Yet its high speed and negligible current drain could be valuable in a few highly specialized but important instruments. One application might be, as an example, in photographic recording apparatus to move motion picture film in fast response to an activating voltage.

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NUTRITION

Real Strawberry Jam Is a Better Buy Than Imitation

➤ IF MRS. AMERICA buys substandard strawberry jam labelled imitation, she is not getting any bargain even if she pays 27 cents for the imitation labelled product when the genuine strawberry jam would cost 41 cents.

Actually she is paying nearly two and one-half times as much per pound for strawberries in the form of preserves. The reason is that the costs of processing, labor, filling and containers are practically identical for the standard and substandard preserves.

These figures were given by Charles W. Crawford, Commissioner of Food and Drugs, at a meeting of the American Bar Association in New York.

"By adding to one pound of genuine strawberry jam about one and two-thirds pounds of sugar, costing 17½ cents retail, and eight-tenths of a pound of tap water, the consumer could get nearly three and one-half pounds of a mixture identical in composition with the imitation jam at a cost of about 58 cents," Mr. Crawford stated.

"The same quantity of imitation jam, purchased as such, costs the consumer 93 cents."

Mr. Crawford's strawberry jam figures were used in pointing out the need to stop gaps in the current law for protection of both consumers and conscientious food manufacturers and processors.

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PSYCHOLOGY

Children Think Adults Are Just Horrible

➤ CHILDREN THINK grown-ups are just horrible. Or at least grown-ups think children think grown-ups are just horrible.

A British psychologist asked 60 normal, intelligent young people to place themselves in the shoes of small boys or girls and then answer some questions. The psychologist, Miss S. B. N. Shimmin, Bedford College, London, was amazed to find that only eight out of the 60 masquerading as children had any friendly feelings toward adults. The rest chose such words as scorn, hatred, distaste, dislike, suspicion, caution, fear, to describe their feelings toward grown-ups.

Miss Shimmin said she asked adults to pretend they were children, because children were inhibited and evasive when faced with questionnaires.

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PSYCHOLOGY

Inherit Neuroticisms

British psychologist finds that "neuroticism is inherited at least to the same extent as intelligence and possibly up to 80%."

➤ IF PARENTS are to take the credit for passing intelligence along to their children, they must also take the blame if their children grow up to be neurotic.

In a study of the occurrence of neuroticism in identical twins as compared with that in ordinary twins, Dr. H. J. Eysenck, London's Maudsley Hospital psychologist, found that "neuroticism is inherited at least to the same extent as intelligence, possibly up to 80%."

This information has been passed along to the British Association for the Advancement of Science by Dr. S. Crown, who reported a whole series of interesting psychological research carried out at the Maudsley Hospital.

There, too, Miss F. Goldman has found evidence to indicate that early weaning of babies may lead to pessimism and aloofness in later life.

Mrs. A. Petrie has shown that following pre-frontal leubotomy, a cutting of the front lobes of the brain to treat some forms of insanity, there is a shift of personality in the patient, who becomes less intelligent, less neurotic and more extraverted.

Another Maudsley Hospital investigation shows that people suffering from excess thyroid secretion are more neurotic and introverted than other people. Patients suffering from similar organic diseases were found in another inquiry to tend to show similar personality patterns and can be distinguished from patients with other kinds of bodily ailments "by the nature and/or extent of these traits of personality."

Doctors may soon be able to detect patients suffering from a certain type of "sub-cortical" brain damage by means of a very simple test in which the patients are asked to make models from wood blocks. It has been found that patients with lesions of the basal ganglia portion of the brain would make the model correctly but could not orient it properly. The test is known as Koh's Block Test.

Dr. J. Brengelmann found that after electric shock treatment for insanity patients were, at least temporarily, less good at learning than they were before the treatment. This deterioration in learning ability was so characteristically associated with clinical improvement that Dr. Brengelmann found he "could predict with some degree of accuracy whether or not a patient had benefitted clinically from the treatment" simply by testing his loss of learning ability.

Dr. Crown comments that Dr. Brengelmann's discovery is "of greatest interest and importance in that it demonstrates experimentally that one of the immediate effects of a widely used physical method of treatment is to cause at least a temporary deterioration in learning ability."

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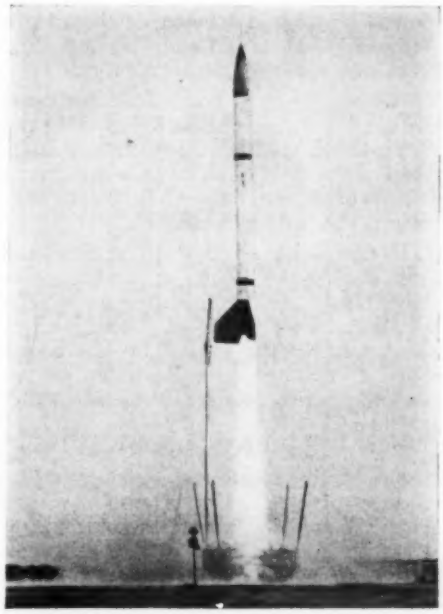
WILDLIFE

Sprays Used to Keep Deer from Nibbling Trees

➤ DEER ARE becoming such a nuisance on the West Coast that farmers are spraying their fruit trees with repellents to keep them from nibbling the leaves and bark.

According to Walter E. Howard of the University of California at Davis and Henry E. Hjersman of the California Division of Fish and Game, deer in California have increased to nearly 1,000,000 head while their natural range has been decreased. Protection of does has also aggravated the situation.



THE "CORPORAL E"—This surface guided missile, developed as a research instrument by U. S. Army Ordnance, is a companion of the "Niki" which was the first guided missile of any type designed and built wholly in the United States. It is the fourth missile of a series of different types developed under Army supervision.

As a result deer have done considerable damage to orchards, gardens and vineyards. Even the building of eight-foot fences has proved ineffective.

Farmers are using repellent sprays which go under a number of commercial brand names. They contain various chemical ingredients which by smell or taste repel the deer. One of the most successful commercial repellents contains a polysulfide type of rubber latex which not only has a bad taste but also sticks to the leaves and bark for about six months.

Such sprays applied to two-year-old fruit and nut trees did not damage the foliage, even when used at twice the strength suggested by the manufacturers and sprayed as often as every two weeks. Trees sprayed included apple, apricot, pear, peach, quince, plum, cherry and almond.

"The incidence of deer damage in California will probably increase steadily because of the rapid human expansion and increased agricultural demands in the state," predict the two California scientists. "This will call for a greater use of the repellent sprays."

Science News Letter, September 29, 1951

BIOCHEMISTRY

Atomic Poisoning of Living Plants Studied

➤ WHETHER ATOMIC fission products can be taken into plants in such quantities as to contaminate them is being studied at the University of California College of Agriculture in Berkeley.

Two fission products, cesium and strontium, though not essential to plant growth, were found to be absorbed in plant roots in laboratory studies by Drs. Roy Overstreet and Louis Jacobson.

These tests are a part of a study to find out exactly what influences the intake of minerals, especially the essential ones, in plants. The problem is aimed at producing a favorable environment in the soil for mineral absorption.

For two years Drs. Overstreet and Jacobson worked to perfect a stable culture process to study mineral absorption by plants. Roots of barley plants grown in the dark were found best suited to this study. The roots are put in culture solutions containing various radioactive mineral salts. In this way rate and amount of mineral absorption can be determined.

Potassium, phosphates, and bromides were found to be absorbed more rapidly when certain amounts of calcium were added. There was also found a competition between the hydrogen in acids and the minerals to be taken into the plant. The reasons for this have not been determined, but future experiments may answer the questions of ion absorption.

This work is being done partly under a grant from the Atomic Energy Commission.

Science News Letter, September 29, 1951

ICHTHYOLOGY

Thousands Caught in New High Speed Fishnet

➤ A NEW kind of fishnet, which can be towed at high speeds and is designed to catch great quantities of small fish for scientific study, has been devised by two scientists at the Marine Station, Millport, England.

In use in the Clyde sea, it was towed at seven knots over a 68-mile course. The scientists, D. T. Gauld and T. B. Bagenal, said the purpose of the net was to investigate the changes in the distribution of young fish in the Clyde sea area. A description of the net appears in the British journal, NATURE (Sept. 22). Catches obtained consisted of 37 species, including up to 250,000 Calanus and 3,000 fish eggs per haul.

The net is an ordinary tow net usually used for plankton. It has a wide circular front end and a narrow circular rear exit. In use at high speeds, this narrow rear exit is turned in upon itself—or "fliped"—as is the foot of a sock before being rolled up. Each of two nets has been towed for more than 160 miles without signs of undue strain.

Science News Letter, September 29, 1951

INVENTION

Patches Zip on Pants Where Hard Wear Comes

➤ KNEE PATCHES for the pants, attachable and detachable at will, have received a government patent. When the workman gets to his job in the morning, he zips the patches on. At the close of day, he zips them off. A youngster on the playground can wear them when needed.

The patches are made of the same material as the pants themselves, or can be made of heavier fabric. For the workman who spends much time on his knees, they may be pads. Well concealed zippers on them and in the inner and outer seams of the pants provide the attachment. Inventor is Kathryn E. Mitchell, Boise, Idaho, who received patent 2,568,083 for this knee protector.

Science News Letter, September 29, 1951

GENETICS

Tomato Breeders Seek "Sports," Abnormal Plants

➤ TO PROVIDE bigger and tastier tomatoes for your dinner table, a world-wide organization of tomato research scientists has been set up.

The Tomato Genetics Cooperative, with headquarters at the University of California's College of Agriculture at Davis, includes about 100 workers in the United States and 12 foreign countries.

Dr. Charles M. Rick, associate professor of truck crops, University of California, is coordinator of the organization.

Main function of the group is to provide a medium of exchange for the latest information on research in the genetics and breeding of tomatoes throughout the world. Another role of the organization is the exchange of breeding stock. The Cooperative issues periodic reports containing research notes from various members. Much of this material has not before been readily available to the majority of the workers in this field.

Tomato growers also assist in the research work of the Cooperative. Occasionally abnormal tomato plants appear in commercial fields. These plants are useful in studying inheritance and also, in some instances, in the breeding of strains with higher yield.

Seeds of these sports or mutants would be appreciated by the members. These seeds should be sent to Dr. Rick, Division of Truck Crops, University of California, Davis, Calif.

Science News Letter, September 29, 1951

MEDICINE

Ultrasound Waves For Better Vaccines

➤ BETTER VACCINES against germs, both bacteria and viruses, may be prepared by the use of high intensity ultrasound waves, Dr. Nelson Newton, of the Battelle Memorial Institute in Columbus, Ohio, suggests in a report.

His suggestion is based on experiments with tobacco mosaic virus. When this plant disease virus was exposed to ultrasound for three and a third minutes, its infectivity, or ability to produce disease in Scotia bean plants, was reduced about 95%.

Using lower intensity levels of ultrasound and varying the length of exposure gave other results. Among them was an increase in the infective ability of "aged" viruses. This, Dr. Newton suggests, might be applied to reactivating and possibly extending the period of usefulness of "aged" vaccines.

The ultrasonic waves reduce the infecting ability of the virus by breaking it into shorter particles. Other scientists have previously reported this, but Dr. Newton used a much higher frequency, seven megacycles, than those previously used. With this frequency, a virus particle 280 millimicrons long is broken into fragments only 20 to 40 millimicrons long.

The 280-millimicron-long unit is the basic infecting unit. When it breaks under the high intensity ultrasonic vibration, it tends to break first at a constant distance from the end of the virus rod and then as the power is increased, it breaks into fragments in a random way. This, Dr. Newton states, "shows a structural weakness at one definite point in the virus rod."

Science News Letter, September 29, 1951

IN SCIEN

OCEANOGRAPHY

Sea Captains Mind Winds To Save Time and Fuel

➤ SEA CAPTAINS—disdainful of the wind since steam displaced sails—are once more beginning to pay respectful attention to the forces of the weather. Some of them do what is called engineering the weather for better navigation and in the process they save fuel and make better time.

One Navy ship, the U. S. S. *Beckham*, by avoiding areas of adverse winds and retarding seas on a trip from the Philippines to Seattle arrived 24 hours ahead of the estimated time and consumed only seven-eighths of the expected amount of fuel. Yet the ship travelled a route 600 miles longer than the great circle route.

The method is described by Louis P. Allen, of the Office of Naval Research.

Mr. Allen says that too little appreciation has been given to the power of the sea and too little is known about the forces which create it. He believes that shipping routes should not always be planned according to great circle courses, that more thorough studies of the power of wind and waves are in order.

Different types of ships react differently to different climatic circumstances, says Mr. Allen, but for each class of ship some generalities can be made. Although the oceans can never be blocked out into specific regions of definite wind and sea conditions, he points out, answers can be computed on a percentage basis and a probability can be stated.

Science News Letter, September 29, 1951

AGRICULTURE

Crop Slide Rule Tells When Harvest Is Due

➤ A CROP "slide rule" promises a "revolution in agriculture."

The slide rule has been devised by Dr. C. Warren Thornthwaite, director of the Climatology Laboratory of Johns Hopkins University, located at the Seabrook Truck Farms, Seabrook, N. J.

When coupled with scientific irrigation methods, he declares, it will enable farmers to know exactly how long, from sowing to harvest, it will take a plant to reach its peak in flavor and quality.

On the slide rule, time is measured in "growth units." April, therefore, is much shorter than June. If one arrow is set at the date the plant is placed in the ground, another arrow points to the day it should reach its peak.

Science News Letter, September 29, 1951

ENCE FIELDS

MEDICINE

Simple Test Could Save Many from Cancer Deaths

➤ ALMOST 26,000 women could be saved from cancer death each year if a simple test were made part of a yearly health examination of all women over 30 years old, Dr. J. Ernest Ayre of Miami, Fla., declared at the meeting of the U. S. Chapter of the International College of Surgeons in Chicago.

The test is called a cervical cytology test. It consists in the painless procedure of scraping surface cells from the neck, or lower end, of the uterus and then examining the scrapings under a microscope to see whether cancer cells are present.

Many times the cancer cells discovered through this test come from tissue that looks perfectly normal to the doctor on visual examination. These are the most favorable cases because cancer is completely curable when found at this stage, Dr. Ayre stated.

Not one woman in 5,000, Dr. Ayre said, gets this test as part of a yearly physical examination, but cancer of the uterus claims 26,000 lives each year. Almost all of them, he said, could be saved by this yearly cervical cytology test.

Science News Letter, September 29, 1951

MEDICINE

Keep Active to Keep Brain Cells Young

➤ KEEP ACTIVE, if you want to keep your brain cells from growing old. Overwork will not speed the aging of your nerve cells. Exercise will delay it.

Evidence for this was presented by Dr. O. Vogt of the Institute for Brain Study at Neusadt/Schwarzwald, Germany, at the Second International Gerontological Congress in St. Louis.

Dr. Vogt made microscopic studies of the nerve cells of normal adult human brains, noting the changes due to age.

In the brains of two women, age 90 and 100 years at their deaths, who had been very active throughout their lives, the aging changes of the nerve cells were considerably delayed, he found.

"In addition," he stated, "in our collection of specimens we have observed no case in which overwork was found to have accelerated the aging of the nerve cells."

The aging process, he reported, may be speeded or delayed by mutations or external factors. Among the external factors he mentioned hardening of the arteries, deficient supply of oxygen in the blood, poisoning and infections. Often the effect is restricted to certain cell types and produces the so-called systematic nerve changes.

All nerve cells undergo an aging process which leads to death of the cells, Dr. Vogt stated. This process may be primary in nature and in that case must be characterized as a normal phenomenon.

The aging process is different in the various types of nerve cells in the brain. The difference may concern the time when aging starts or the speed with which it proceeds. Some types of brain cells are still normal in persons 100 years old.

Science News Letter, September 29, 1951

PSYCHOLOGY

Words Come Slower To Older People

➤ WORDS COME slower to an older person, though he may know just as many words as a young man or woman.

Studies showing this were reported by Drs. J. E. Birren and J. Botwinik of the U. S. National Institutes of Health, Bethesda, Md., at the Second International Gerontological Congress in St. Louis.

In their studies, 341 persons ranging in age from 16 to 90 were required to write as fast as they could words beginning with a given letter, for example, S. Thirty-one persons aged 20 to 29 wrote a mean of 24.9 words in two minutes, but 30 persons aged 70 to 79 wrote a mean of 6 words per two minutes.

The younger group wrote at about 52% of their rate of writing when copying words, whereas the elderly wrote at about 36% of their potential writing speed. Thus, the elderly show a retardation in verbal fluency beyond that associated with a slowing in the motor response of writing.

The present results indicate, state the scientists, that an elderly individual may show a defect in thought arising from a low rate of association.

Science News Letter, September 29, 1951

PHYSIOLOGY

Hedgehog Awakened by Hormone Alarm in Body

➤ IF YOU find it hard to get up in the morning, consider the hedgehog: When he is awakened from his long winter sleep it is such a great physiological strain that an alarm reaction is set off in his body.

This alarm reaction is like that in humans when, under stress, the adrenal and other glands grow very active in preparing the body for defense against stress or threat of danger.

The hedgehog's alarm reaction or awakening is reported by Drs. Paavo Suomalainen and Anna-Maija Herlevi of Helsinki University, Finland, in the journal, SCIENCE (Sept. 21).

Science News Letter, September 29, 1951

VETERINARY MEDICINE

Rabbit Fountain of Youth Is in Thyroid Hormone

➤ THE FOUNTAIN of Youth, for male rabbits at least, seems to have been found in the thyroid gland. This is the U-shaped gland in the neck which in some conditions develops a goiter.

Doses of thyroid hormone considerably improved the sexual desire and stimulated production of male germ cells in buck rabbits previously classed as infertile because of their poor breeding records, Dr. M. Maqsood of the University of Cambridge School of Agriculture reports in the journal, NATURE (Sept. 15).

Production of thyroid hormone decreases, as does male fertility, with advancing age, Dr. Maqsood points out. His rabbit experiments were made to learn more about the relation between the thyroid gland and the male sex glands. The doses of thyroid hormone that apparently rejuvenated the buck rabbits were "physiological," that is about the amount normally produced by the gland.

What the studies may mean for human males is not stated in Dr. Maqsood's report. Potential importance for breeders of food animals other than rabbits is suggested by the fact that the research was done at an agricultural school.

Science News Letter, September 29, 1951

MEDICINE

Female Hormone Banks For Cancer in Men

➤ FEMALE HORMONE banks are helping the fight against cancer of the prostate gland in men in two ways, it appears from a report by Dr. Edward M. Tracy, Jr., of Hamburg, N. Y., to the U. S. Chapter of the International College of Surgeons meeting in Chicago.

1. Men with far advanced prostatic cancer got "dramatic relief" of pain and some were able to return to work through the aid of these hormone banks.

2. Although not curative, the research with female hormone treatment spotlights a relation between cancer of the prostate and adrenal and pituitary glands as well as sex glands. Following this lead may give better weapons for fighting the disease.

The hormone banks consist of pellets of semi-synthetic female hormone. These are buried beneath the skin and release the hormone gradually over a period of three months. Previously, female hormone for prostatic cancer relief has been given by mouth. Some patients forget to take the treatment and others get stomach upsets from it.

Although the hormone banks did not help all the patients, many were helped and some no longer required morphine for pain relief.

Science News Letter, September 29, 1951

ASTRONOMY

Jupiter Still Prominent

Giant planet, shining at its brightest, continues to dominate October's evening skies. On Oct. 2 two planets are at their nearest for the year.

By JAMES STOKLEY

➤ THE BRILLIANT planet Jupiter continues to dominate the evening sky. Indeed, on Oct. 2 it is directly opposite to the sun, which means that it rises as the sun sets and is visible through the night. In other words, on that date both the earth and Jupiter are in the same direction from the sun and the two planets are at their nearest for the year. They are then separated by 366,800,000 miles. Because of this, Jupiter is now at its brightest—of magnitude minus 2.5 on the astronomical scale of stellar and planetary brightness. This is not as bright as Venus appeared when in the evening sky a few months ago, or as it does now in the east in the early morning hours. With the exception of Venus, however, Jupiter is now shining more brilliantly than any other star or planet ever does.

By the time of the evening for which the accompanying maps are prepared (10:00 p. m., your own kind of standard time at the beginning of October and an hour earlier at the middle) Jupiter has climbed high in the southeastern sky, where it is easily located because of its splendor. It is in the constellation of Cetus, the whale. Actually, this is not officially one of 12 constellations of the zodiac, which is the path of the planets as well as of the sun and moon. Pisces, the fishes, directly above, is one of the dozen, and one corner of Cetus, as the constellation was officially delineated by the International Astronomical Union, extends up into it. At present, Jupiter happens to be in this corner.

"Great Square of Pegasus"

Aside from the presence of Jupiter, the best way to locate the fishes is to find part of the constellation of Pegasus, the winged horse, which is right above them. Three of the stars in Pegasus, together with Alpheratz in neighboring Andromeda (the chained lady), form a huge square called the "Great Square of Pegasus," that is marked on our map of the southern sky. Just below the square is a ring of seven or so stars, of which only three are bright enough to be marked on the map, that is called the "circlet of the western fish." Extending from this, toward the east, is a line of stars that was represented on the picturesque old star maps as a ribbon tying the two fishes together. This went down to a supposed knot, indicated by the star closest to Cetus, and then up to the other fish, which is on the eastern side of the square.

None of these stars, in Cetus, Pisces or Pegasus, is of the first magnitude. However, six of at least this brilliance are now visible in the evening sky. Brightest is Vega in Lyra, the lyre, high in the western sky. Its magnitude is 0.1, even brighter than first, which extends from 0.5 to 1.5. It is a little less than a tenth as bright as Jupiter.

Deneb in "Northern Cross"

Above Lyra is Cygnus, the swan, in which stands Deneb. This star is at the northern end of a group of stars that form a well-shaped cross, the so-called "Northern Cross." As a cross it is much more perfect than its famed southern counterpart, though not of as brilliant stars. To the left of Vega we find Aquila, the eagle. These three—Vega, Altair and Deneb—make a large triangle which can be located easily.

Another first-magnitude star appears low in the south, in line with the two stars that make the western side of the great square. This is Fomalhaut, in Piscis Austrinnus, the southern fish, which is entirely separate from the constellation of Pisces. Fomalhaut, it will be noted, is shown on our map by the symbol for a star of the second magnitude. The reason is that even though it is now about as high as it ever rises for us in these latitudes, it is still rather low. Consequently, its rays must pass through a considerable thickness of the earth's atmosphere, which absorbs some of its light, and makes it look fainter than if it appeared as high, perhaps, as Pegasus.

Low in the northeast Auriga, the charioteer, is now visible, and in this group shines Capella. To the right of this figure, and just coming into view in the evening for the first time since last spring is Taurus, the Bull, with Aldebaran, another first-magnitude star that looks fainter than it should because of its low altitude. Unlike Fomalhaut, however, Aldebaran will rise high in the south during winter evenings and will then shine with full glory.

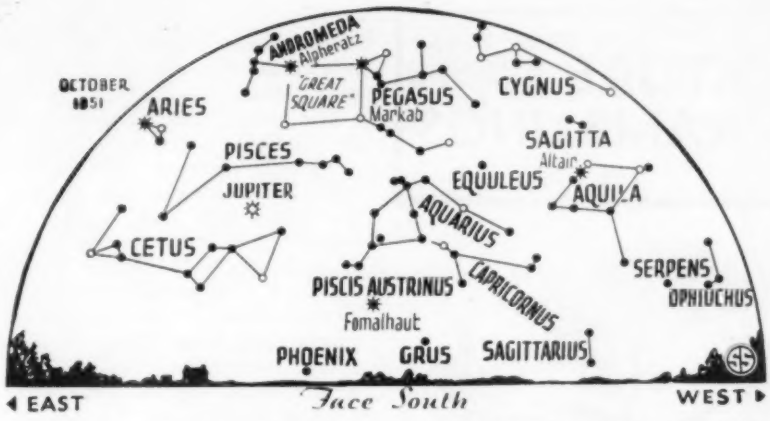
As mentioned above, Venus, which was seen in the evening until mid-August, has now moved to the morning sky, and shines brilliantly in the east before sunrise. It is now moving through the constellation of Leo, the lion, and is at its greatest brilliance on Oct. 10, with a magnitude of minus 4.3. This is about 5.25 times as bright as Jupiter. The planet Mars is in the same part of the sky, though many times as faint. Moving toward the east, on Oct. 3 it passes within a degree, or about twice the apparent diameter of the full moon, of the star Regulus. Mars has now started to swing towards the earth. It will come closest on May 8, 1952, when it will be of magnitude minus 1.5 or nearly 23 times as bright as it is at present.

Jupiter Biggest Planet

One distinction of the planet Jupiter, which is now so prominent in the evening, is its great size. With a mean diameter of 87,000 miles, or 11 times that of the earth, it has 1,312 times the volume of our planet. However, being of lower density than earth, it has only 318 times as much mass, or "weight." Big though it is, it is still small compared to the sun, whose diameter is 109 times that of earth. In mass, the sun is about 1,047 times that of Jupiter.

Another distinction of this giant planet is its extensive retinue of satellites, more than of any other planet. The four biggest were discovered in 1610 by Galileo with his little telescope, and they represent actually the first astronomical discovery with the aid of that instrument. Since then seven more have been found, and American astronomers accounted for all but one of these.

In 1892, E. E. Barnard, at the Lick Observatory in California, found the fifth, a



far smaller body than those of Galileo. They range from 2,000 to 3,200 miles in diameter, while V, as Barnard's is usually designated, is probably about a hundred miles in diameter. In 1904-5 C. D. Perrine, at the same observatory, found VI and VII, the former with a diameter about the same as V, and the latter perhaps about 40 miles.

Then England scored, when in 1908 P. J. Melotte, at the Royal Observatory at Greenwich, found number VIII, which also has a probable diameter of 40 miles. Lick Observatory made the next discovery, in 1914, when Dr. Seth B. Nicholson, while searching for VIII, came across a new one, called IX. This has a diameter around 20 miles.

Spotted by Large Telescope

After that came an intermission, but in 1938 Dr. Nicholson, by that time a member of the staff of the Mt. Wilson Observatory, found X and XI with the aid of the 100-inch telescope, at that time the world's largest telescope. The diameters of these tiny bodies has been estimated at about 15 miles. Perhaps there are still more, but if so they are undoubtedly small and faint and will be most difficult to locate.

Incidentally, after 1938, no more discoveries of satellites of any planets were made until ten years later. In 1948 Dr. Gerard Kuiper, of the Yerkes Observatory and the MacDonald Observatory, which are operated together as a joint project of the Universities of Chicago and Texas, found a new satellite of Uranus, raising that planet's known attendants from four to five. He named his discovery Miranda. The following year he scored again with Nereid, a new moon of Neptune, which only had been credited with one up to then.

Aside from the moon, there are 29 satellites now known belonging to the various planets of the solar system, and U. S. astronomers have accounted for 12 of these. England comes next with eight. For next place, Italy and France are tied, with four each, while Holland is last with one. Of all the planets that have satellites, U. S. astronomers have discovered at least one for each.

Celestial Time Table for October

Oct.	EST	
2	11:00 p. m.	Earth and Jupiter in same direction from sun, Jupiter 366,800,000 miles from earth
7	2:00 a.m.	Moon nearest, distance 229,900 miles
	7:00 p. m.	Moon at first quarter
10	2:00 p. m.	Venus, visible in east before sunrise, at greatest brilliancy
13	11:18 p. m.	Moon passes Jupiter
14	7:51 p. m.	Full moon
21	noon	Moon farthest, distance 251,300 miles
22	early a. m.	Meteors visible radiating from constellation of Orion, visible in east after midnight
	6:55 p. m.	Moon in last quarter
25	6:04 a. m. to 7:22 a. m.	Moon passes in front of Regulus, bright star in constellation of Leo. (This is visible in most of U. S.) Times given are for Washington, and will be earlier in West.
26	11:49 a. m.	Moon passes Mars
	6:24 p. m.	Moon passes Venus
30	8:54 a. m.	New moon

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, September 29, 1951

PUBLIC HEALTH

Housecleaning for Health and Safety

➤ WITH THE children back at school, many homemakers turn now to fall housecleaning and renovating. This tiresome job if properly done can contribute to the health and safety of the family as well as to the appearance and comfort of the home.

Cleaning out trash and other litter from cellar, attic, cupboards and closets reduces a fire and accident hazard and removes good nesting spots for mice that may spread disease.

You want to avoid accidents during the cleaning period and while you are doing the cleaning you may find many ways to make home safer for the rest of the year.

Begin with the stepladder used for reaching high shelves, ceilings, high curtain rods and the like. Be sure a stepladder is used, and not the edge of a chair, box or table which might slip or collapse and bring the climbing cleaner crashing in a bone-breaking or possibly killing fall. Also make sure the stepladder itself is safe.

Then see to it that pails, mops and other articles used in the cleaning are put in their proper places when not actually in use, so there is no chance of their tripping the unwary. If this practice is started during the fall housecleaning, it should be easy to remember and follow it on the daily or weekly light cleaning periods.

Besides getting the home clean, you may at this period be getting it into good repair for the coming season. This includes checking electrical equipment and its wiring, furnaces, stoves, heaters and other mechanical appliances.

Broken chairs, railings, loose treads or stair carpets, frayed edges of rugs and the like should be repaired. Make a light inspection of your home. More light in the halls or on the stairways may save someone in your family from a dangerous accident.

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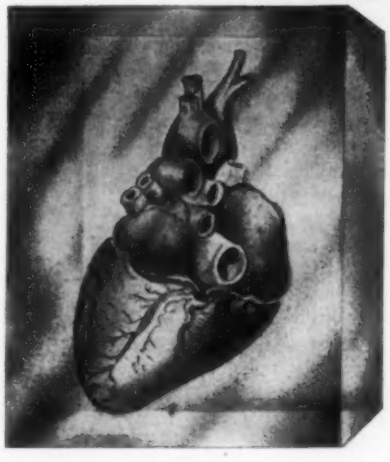
PLASTICAST



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PHYSICS

What Is Matter Made of? It's Discussed Secretly

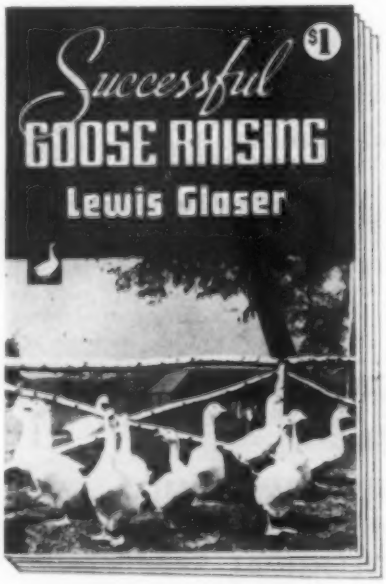
➤ WHAT MATTER is made of, a fundamental question, was discussed by about 150 nuclear physicists of the United States and 11 non-Iron Curtain countries meeting at the University of Chicago. The conference was behind closed doors although only non-secret nuclear physics was allowed on the program.

Fear that some newspaper reporters, if allowed at the sessions, would give the impression that atomic secrets were being revealed is the reason that the discussion was secret, it was stated officially in a telephone interview with SCIENCE SERVICE.

The Chicago sessions were jointly sponsored and financed by the Office of Naval Research and the Atomic Energy Commission.

Fifteen fundamental particles so far are known to make up atoms, exist in cosmic rays often for only fleeting fractions of a second, or are theoretically necessary. The latest of these is the anti-proton, the counterpart of the hydrogen atom. The anti-proton will probably receive major discussion.

Science News Letter, September 29, 1951



GEESE AND GANDERS

The raising of geese is much more than a profitable and fascinating activity on the farm or on the lawn. Right now we Americans are asked to produce an enormous volume of goose down and feathers for aviators' suits, mountain and Arctic sleeping bags for our Defense Forces. **The need is urgent, vital, and very critical!**

SUCCESSFUL GOOSE RAISING, now in its 1951-52 edition, is a concise, 96-page, illustrated, fact-crammed guide that explains every detail of full-time or part-time goose raising.

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BOTANY

NATURE RAMBLINGS

Wild Asters

"But when the first frost comes, and all the rest,
Rending their garments, yield without a blow,
Then these, in cloth-of-gold and Tyrian dressed,
Stand forth to fight it out, unbacked, alone."

➤ THUS, IN a forgotten poem, are the wild asters praised for their brave beauty in the fall, when the sun is going farther from us every day, and most other flowers have long since dropped and died. And indeed, the courage and beauty of autumn woods and fields are due in no little degree to these little turquoise and amethyst stars—for "Aster" means a star.

Frosts may discourage even autumn flowers, but this one at least will shine through all chill dawns defiantly until the snow itself comes to quench it. For the wild aster is hardier even than its cousin-companion of fall roadsides, the goldenrod.

Wild asters form one of the most numerous botanical brotherhoods of our outdoors. For the northeastern quarter of the country alone, Gray's Manual lists 59 species; and there are many more in other sections.

Some of them are white-flowered, like the ericodes group but the great majority of the genus are blue, ranging from the tiny but brilliant amethystinus to the bold, purplish, inch-wide heads of the New England aster.

Just why the latter flower, the most gorgeous of all asters, should have been made the property of New England is a riddle. It is by no means confined to New England, for it ranges the whole countryside west as far as the Great Plains. And it has as little suggestion of the traditional dour and strait-laced character of a Puritan about its purple-and-gold head as a Restoration Cavalier.

It is a bit of botanical irony, or perhaps there is even something compensatory about it. It may symbolize the suppressed but ardent hearts of flame that often beat beneath the drab coats of the people of the hard North.

The flowers most commonly called aster are the China asters, only distantly related to the wild plants of our woods and roadsides. But even some close relatives of the true asters have been brought into this country from abroad, as especially worthy of adaptation to American conditions.

Bailey's Cyclopedia of Horticulture lists an even dozen of these. Particularly notable among them is the Asiatic Aster tataricus, a stiff, stout plant much taller than any of our native species. This aster reaches a height of seven feet, holding up its blue head along with the sunflowers, hollyhocks and golden glows.

Science News Letter, September 29, 1951

CHEMISTRY

Wash Day Chemical From Laxative Pills

➤ THE INGENUITY of the American housewife matches that of American chemists.

When she reads in the newspaper that a new chemical product, called CMC, will make her wash day problems easier, she wants it. And when she cannot get it any other way, she gets it at the drug store in a laxative, opens the capsules, and shakes or squeezes the powder into the rinse water for cotton clothes.

CMC is the short name for carboxymethyl cellulose. Its effect on cotton goods is much like that of ordinary starch, but in addition it prevents soiling and makes the clothes easier to wash clean without making the fabric noticeably stiff.

This soil-resistant treatment was developed by the Institute of Textile Technology at Charlottesville, Va., in cooperation with the Southern Regional Research Laboratory of the U. S. Department of Agriculture. The material is in commercial production and is expected to be available soon in other forms than laxative capsules for home laundry use. One form, shown at a Department of Agriculture conference, comes with bluing in it.

Science News Letter, September 29, 1951

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WASHINGTON, D.C. • MAY 8-10, 1952

Upper right: Barbara E. Joy of Warwick, Rhode Island, and Edmund Richards of Belleville, Illinois, winners of first awards.

At left: Group of young finalists on steps of the Monsanto Chemical Company, St. Louis, Missouri.

Below: Mary Helen Martin of Hyattsville, Maryland, and Peter Miller of St. Paul, Minnesota, winners of first awards.

Local science fairs, stimulated by educators as interscholastic activities, inspire young students to excel in scientific projects.

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A CONCISE HISTORY OF ASTRONOMY—Peter Doig—*Philosophical Library*, 320 p., $4.75. Bringing up to date the story of this the oldest of the sciences. Foreword by the Astronomer Royal.

CONFERENCE ON THE SUN IN THE SERVICE OF MAN—Harlow Shapley, Chairman—*American Academy of Arts and Sciences*, 145 p., illus., paper, $2.50. Papers read at a conference which brought together researchers at Harvard and MIT as well as others interested in solar problems.

THE DRUG PLANTS OF ILLINOIS—Leo R. Tehon—*Natural History Survey*, 135 p., illus., paper, single copies free upon request to publisher, 184 Natural Resources Building, Urbana, Ill. How to collect, dry and market common herbs with medicinal value.

EXHIBIT TECHNIQUES—Helen Miles Davis—*Science Service*, 112 p., illus., $2.00. For those who build exhibits for science fairs and other displays, this book gives invaluable information and suggestions. There are hints for planning exhibits, working out effective panels, lettering, labeling, and planning for safe construction.

FOOD AND YOU—Edmund Sigurd Nasset—*Thomas*, 92 p., $3.00. What the author describes as a "modest essay on a most important subject."

THE FORMATION OF MINERAL DEPOSITS—Alan M. Bateman—*Wiley*, 371 p., illus., $5.50. Why minerals are where they are and where others may be found.

FRONTAL LOBOTOMY AND AFFECTIVE BEHAVIOR: A Neurophysiological Analysis—John F. Fulton—*Norton*, 159 p., illus., $3.00. A Salmon lecture discussing the effects of this serious brain operation on human behavior and urging that the original radical lobotomy be abandoned in favor of a more restricted lesion.

THE HISTORY OF SCIENCE: Origins and Results of the Scientific Revolution—Sir Lawrence Bragg and others—*The Free Press*, 184 p., illus., $2.50. Radio talks by noted scientists. Not intended as a comprehensive history, this little book presents rather significant samples beginning with Democritus in 460 B.C.

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INSECT RESISTANCE IN CROP PLANTS—Reginald H. Painter—*Macmillan*, 520 p., illus., $8.50. Bringing together scattered references on the subject and offering tentative conclusions as a result of the author's personal experience.

THE LOST PHARAOHS: The Romance of Egyptian Archaeology—Leonard Cottrell—*Philosophical Library*, 256 p., illus., $6.00. Telling for amateurs the glamorous story of Egypt's ancient past.

MAN MAKES HIMSELF—V. Gordon Childe—*New American Library*, 192 p., illus., paper, 35 cents. The story of the rise of civilization originally published in England in 1936 by the Rationalist Press.

MIRACLE AT KITTY HAWK: The Letters of Wilbur and Orville Wright—Fred C. Kelly, Ed.—*Farrar, Straus*, 482 p., illus., $6.00. Selected from about 30,000 items deposited in the Library of Congress to tell the story of the Wright's achievements and reveal their personalities in their own words.

MODERN PLASTICS ENCYCLOPEDIA AND ENGINEER'S HANDBOOK: Including Special Defense Section—*Plastics Catalogue Corporation*, 636 p. illus., paper, $2.00. Reference work for dealers, industrial chemists and others interested in this comparatively new field.

NUTRITION FOR HEALTH—Holger Frederick Kilander—*McGraw-Hill*, 415 p., illus., $3.00. A high school text intended to teach young people how to select their foods and how to prepare and care for them.

100 WAYS TO SAVE MONEY BUYING YOUR CAR: Or How To Be an Expert Car Buyer—W. J. K. Cummings—*Cummings Enterprises*, 6th printing, 96 p., illus., paper, $1.25. Tips on how to keep from being cheated on either your new car, used car, or financing, etc. A new edition of a popular book entitled "How To Be an Expert Car Buyer".

PLANTS IN THE CITY—Herman and Nina Schneider—*John Day*, 96 p., illus., $2.50. Telling boys and girls, through simple experiments, how plants can grow even in the city and without soil.

PSYCHOANALYSIS, MAN, AND SOCIETY—Paul Schilder—*Norton*, 382 p., $4.00. The sociological implications of emotional deviations discussed from the psychoanalytic viewpoint.

RADIOCARBON DATING—Frederick Johnson, Ed.—*Society for American Archaeology*, 65 p., paper, $1.50. Including a timetable of radiocarbon dates for various important samples of ancient remains and discussions by various experts of their significance.

READ THE LABEL ON FOODS, DRUGS, DEVICES, COSMETICS—Food and Drug Administration—*Govt. Printing Office*, 40 p., illus., paper, 15 cents. Telling how to read the label to get your money's worth and guard your family's health. (See p. 207).

SOCIAL ANTHROPOLOGY—E. E. Evans-Pritchard—*The Free Press*, 134 p., $2.50. Six radio talks intended to acquaint the public with the little-known science of social anthropology. The emphasis is on history of the science.

UNDERSTANDING YOUR SON'S ADOLESCENCE—J. Roswell Gallagher—*Little, Brown*, 212 p., $3.00. A physician writes for fathers about the ordinary, healthy son who is becoming a man.

WASA-WASA: A Tale of Trails and Treasure in the Far North—Harry Macfie—*Norton*, 288 p., $3.00. Wasa-Wasa means *far, far away* and this is a tale of adventure in the distant North. Translated from the Swedish by F. H. Lyon.

Science News Letter, September 29, 1951

MEDICINE

Viruses Lurking Until Old Age May Cause Cancer

➤ WHETHER, UNDER certain conditions, ordinary viruses such as cause diseases ranging from polio to common colds can induce cancer is a problem posed by findings reported to the Second International Gerontological Congress in St. Louis.

The findings, on cancer in birds, were presented by Drs. F. Duran-Reynals and B. A. Briody of Yale University School of Medicine.

In birds, these scientists reported, the cancer-causing viruses behave at first as ordinary viruses. They infect the chicken or other bird at an early age. They may induce a non-cancerous disease or they may not. But after this stage, the viruses remain in hiding in the bird until the bird later reaches a certain age, the cancer age.

Then the virus shows itself as a cancer virus. It varies or mutates at this stage, probably under the influence of the age factor of the bird that acts as the virus host.

Through this mutation or variation, the virus become capable of causing a great variety of tumors or leukemias.

Later, through further effects on the virus, the age factor suppresses fundamental attributes of malignancy, such as steady growth. Masking of the virus and regression of the tumor may resu.t.

Science News Letter, September 29, 1951

MEDICINE

More Cortisone Relatives Available for Testing

➤ LARGE SUPPPLIES of two adrenal gland hormones related to the anti-arthritis remedy, cortisone, are now available for trial on patients, Dr. Richard S. Schreiber, director of The Upjohn Company, announced in Kalamazoo, Mich.

The hormones are known as compound B and Compound F. In animals compound F is more active then cortisone and it is believed to be the predominant natural hormone.

The larger supplies of these two hormones result from a method developed by Upjohn chemists for partial synthesis from hog glands and easily accessible sterol chemicals.

Science News Letter, September 29, 1951

TECHNOLOGY

Wool-Like Textile

➤ TWENTY MILLION pounds a year of a new synthetic textile fiber which looks, feels and behaves like wool is the production goal of two large British firms who have teamed up for the purpose.

This new synthetic, named Ardil by Imperial Chemical Industries, Ltd., its manufacturers, is made from extracted peanut meal supplied by Lever Bros. & Unilever Limited as a by-product of their oil extraction operations. This peanut meal was formerly used as a cattle feed, but it will be far more valuable in its new role.

I.C.I. research chemists have discovered how to convert the proteins from the peanut meal into a synthetic fiber which, as it is protein in nature like wool itself, has much the same properties. By contrast, other synthetics such as rayon and nylon are more like cotton and their use is confined largely to clothing for outdoor and summer wear.

Ardil is like wool in its dyeing, moisture-absorbing, warmth and fire-resisting properties. In wool mixtures in the form of worsteds, woollens, hosiery, blankets, felts, carpets, hats and other products users will have difficulty in distinguishing them from all-wool fabrics.

Ardil can be produced at a cost well below the current price of wool.

The new synthetic is expected to bolster Britain's rapidly dwindling stocks of raw wool.

Similar Fiber from Corn

Synthetic fiber made from peanut protein is not yet on the American market, but a similar fiber made from zein, a pure protein extracted from corn is in commercial production under the name of Vicara by the Virginia-Carolina Chemical Corporation, Richmond, Va.

A peanut fiber called Sarelon has been produced by the Southern Regional Research Laboratory of the U. S. Department of Agriculture in experimental lots and the information made available to industry.

Casein, the protein of milk, soybean protein and egg albumen can also be made into protein fiber of wool-like character. Chicken feathers yield keratin fibers which are said to compare favorably with fiber made from casein and soybean protein.

Science News Letter, September 29, 1951

PUBLIC HEALTH

For Health, Read Label

➤ THE SMART person reads the label, even the small print, when he buys foods, drugs, devices and cosmetics. He can protect both his health and his pocketbook by doing so. The label gives information required by law for protection of the purchaser.

The Federal Food, Drug, and Cosmetic Act sets the rules for labeling foods, drugs, and cosmetics that move from one state to another or are imported into the United States. It is the job of the Food and Drug Administration, operating under the Federal Security Agency, to make certain that such products are labeled according to these rules.

Today almost every processed food is packaged to protect it from dust and insects and to make it easier to handle. Since the buyer cannot examine the contents, he must depend upon a truthful label.

The enforcement of labeling regulations protects this country's large majority of honest manufacturers as well as consumers from unfair practices. In the label the manufacturer is required to tell you what is inside the package.

Labels must be truthful, they must not be misleading and they must be easy to understand. Drug labels must give adequate directions for use and unless the label is on a prescription drug it should tell what the drug is for.

For some foods, standards of identity, quality and fill of cantainer have been set. These standards are set by order of the Federal Security Administrator, after public hearings at which manufacturers, representatives of consumers, home economists and nutrition experts, among others, discuss the proposed standards. One such standard, for example, requires that all fruit preserves and jellies contain 45 parts by weight of the fruit ingredient to 55 parts by weight of sugar.

The Food and Drug Administration has a booklet which tells simply and clearly what to look for on the label to protect yourself when you buy foods, drugs, cosmetics and devices. You can get a copy of "Read The Label" from the Government Printing Office, Washington 25, D. C., for 15 cents. (See p. 206.)

Science News Letter, September 29, 1951

MEDICINE

Pick Long-Lived Mother To Live to Ripe Age

➤ PICK A long-lived mother, if you want to live long. The length of Daddy's lifespan does not count as much.

This advice is based on genealogical findings reported by Dr. E. Jalavisto of the University of Helsinki, in Finland, to the Second International Gerontological Congress in St. Louis.

He studied data on 18,000 cases collected from Finnish and Swedish genealogists.

The length of life of fathers does not significantly increase the lifespan of daughters and even in sons the effect is less than that of the mother's longevity.

Father's age when the children are born also does not have any effect on the offspring's expectation of life, but the mother's does. Babies born when mother's age is high have a shorter life expectancy than those born to young mothers.

Science News Letter, September 29, 1951

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CHRISTMAS LAMP shade, usable on any table electric lamp, replaces the ordinary shade and looks like a small fir tree. Shaped like a 16-inch high cone, it is colored in shades of green, and even has sturdy projecting twigs and branches on which Christmas tree ornaments may be hung.

Science News Letter, September 29, 1951

PEEL-OFF PASTE, to hold wall paper in position for several days and then permit its easy removal, is primarily for the motion picture industry. It contains a carefully proportioned mixture of glycerine, methyl cellulose and water. Amount of glycerine adjusts the setting time.

Science News Letter, September 29, 1951

NEEDLE THREADER, claimed usable by a blind person, is suitable for almost any type or size of thread and will thread either an ordinary or a sewing machine needle. A movable plunger revolves hand needles so that it can pass through the eye to catch a thread looped over the device.

Science News Letter, September 29, 1951

SNACK HOLDER for the hors d'oeuvres table is a seven-inch-long hand-carved wooden pig of California redwood with 24 holes in its back for gaily colored plastic toothpicks holding olives or other appetizers. Thirty extra picks, tucked in an inside cavity, are furnished with the piggy.

Science News Letter, September 29, 1951

INCANDESCENT ELECTRIC lamp, resembling the picture tube for a small television set, is designed for use in factories with an atmosphere containing dirt, smoke and fume particles because such particles will not cling to it. It is an 800-watt lamp that fits into ordinary sockets.

Science News Letter, September 29, 1951

ASPIRATOR, for use on airplanes to draw liquids out of the mouth of a patient, is shown in the illustration. It is a lightweight, continuous-suction, electrically-operated type developed by the U. S. Air Force for use in transporting paralyzed or unconscious men. Excessive saliva, or blood, in the mouth might cause death.

Science News Letter, September 29, 1951

STAR FINDER is an optical instrument that projects onto the night sky a chart of any region of the heavens, apparently labeling the stars with names and the names and shapes of their constellations. Amateurs quickly learn to identify 135 stars with the 30 charts provided.

Science News Letter, September 29, 1951

SAFETY OUTLETS for household electric currents have inside them plastic disks which snap closed when the plug-in socket is removed, thus foiling children's attempts to insert objects into live wire electric outlets. They are easily installed by anyone without special tools.

Science News Letter, September 29, 1951

Do You Know?

Crab *grass* likes sun; it does not sprout in the shade.

Quick freezing and thawing is the cause of much damage to *plants* during winter months.

Food choices are based more largely on tastes than other properties.

The age of a *dove* can be determined from its wing.

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